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United States
Department of
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Cooperative State
Research Service

Animal Health Science Research Advisory Board

1988 Annual Report

COOPERATIVE STATE
RESEARCH SERVICE
ACQUISITION & EVALUATION
DIVISION

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ANIMAL HEALTH SCIENCE RESEARCH ADVISORY BOARD
1988 ANNUAL REPORT

Cooperative State Research Service
United States Department of Agriculture

Issued October 1989

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CONTENTS

Executive Summary.....	vi
Current Concerns in Animal Health.....	1
Status of Programs.....	2
Section 1433, Animal Health and Disease Formula Program.....	2
Section 1414(c) (1), Special Research Grants in Animal Health.....	3
Competitive Research Grants Program.....	4
FDA Minor Use Animal Drugs.....	5
Table 1 - 1433 Formula Funds.....	6
Table 2 - 1433 (1980-88).....	7
Table 3 - Special Grants by Commodity.....	12
Table 4 - Special Grants Summary (1988).....	20
Table 5 - Specific Commodity Areas/Percent of Funding.....	21
Appendix 1 - Priority Summary.....	22

EXECUTIVE SUMMARY

The Animal Health Science Research Advisory Board was established by Public Law 95-113, The Food and Agriculture Act of 1977, to advise the Secretary on the implementation and priorities of animal health research authorized by the act. This includes two programs -- Section 1433, The Animal Health and Disease Formula Research Program, and Section 1414 ooo(c)(1), Special Research Grants for Animal Health. Both programs are administered by the Cooperative State Research Service and have received appropriations over 9 consecutive years (fiscal years 1979-88). The Animal Health Science Research Advisory Board has provided consultation and advice essential to the implementation of these programs.

New research under these programs was initiated in Colleges and Schools of Veterinary Medicine, State Agricultural Experiment Stations, and in other cooperating institutions. Currently, research projects aimed at providing solutions to food animal health problems are being conducted under the Section 1433 program. Under the Special Research Grant Program, 648 projects have been selected competitively for funding from 4,373 proposals submitted by scientists over a 9-year period. Many of these funded projects are still in progress.

This report summarizes the current status of animal health research programs under Section 1433 and Special Research Grants and the 1988 recommendations and actions of the Animal Health Science Research Advisory Board.

The Animal Health Science Research Advisory Board (AHSRAB) recommended that (1) there be no change in the allocation of funds for each commodity area, (2) strong support be given to adjusting the program of solicitation to include Salmonella enteritidis and Animal Welfare, (3) a representative from the AHSRAB attend the Competitive Grant Advisory Board Meeting, (4) the Competitive Grant Program be preserved as is with no earmarking from congressional sources, (5) the current structure and concept of 1433 funding be preserved, and (6) they, as commodity group representatives, continue to have input into animal health research programs in CSRS whether they be in the current Special Grants Program or the Competitive Grants Program as proposed in the 1990 budget. Input would be focused on recommending research priorities.

ANIMAL HEALTH SCIENCE RESEARCH ADVISORY BOARD

1988 ANNUAL REPORT

Current Concerns in Animal Health

Losses from food animal diseases are estimated to be 18-20 percent of the \$70 billion gross income from animals each year. This touches every person in this Nation, rich or poor, since it adds to the first-dollar-cost of food.

Research is urgently needed to solve problems which cause inefficient production and reduced productivity. The emphasis is no longer on pounds and numbers but on quality and efficiency of use of capital inputs of labor, equipment, feed, facilities, land, and drugs, antibiotics, and other high-cost chemicals.

Today, more than ever before, the consumer is questioning the quality and safety of our animal food chain. We must develop technologies to provide a safer and higher quality animal food source and restore that credibility. Improved food safety and quality through enhanced animal health must be a driving emphasis in our research.

Previously unimaginable improvements in production efficiency are now possible through application of "cutting edge" technologies of molecular biology and computer-assisted systems. If these can be brought to bear on the problems in animal health and disease facing the livestock and poultry industries today, tomorrow will surely bring solutions that have been evading researchers for decades.

The Food and Agriculture Act of 1977 (PL 95-113) recognized significant research opportunities to increase livestock production efficiency and food safety through emphasis on solving animal health problems.

Two new extramural programs were initiated which provide USDA support for animal health and disease research under authorizations of PL 95-113. These are the Animal Health and Disease Research (Section 1433) Formula Program and the Animal Health Special Research Grant Program (Section 1414(c)(1) amending Public Law 89-106). Provisions of these authorizations for animal health research were further strengthened under amendments included in Public Law 97-98, the Agriculture and Food Act of 1981, and Public Law 99-198, the Food Security Act of 1985. The U.S. Department of Agriculture Appropriation Act for fiscal years 1979-86 provided funds to carry out animal health research provisions of Public Laws 95-113 and Public Law 99-198 at levels indicated in table 1.

Status of Programs

Section 1433, Animal Health and Disease Formula Program

Program Objectives

The Animal Health and Disease Formula Program (Section 1433) is directed toward improving the health and productivity of animals and the welfare of producers and consumers of animal products; protecting human health through control of animal disease transmissible to humans; minimizing livestock and poultry losses due to transportation and handling; facilitating the effective treatment and prevention of food animal and horse diseases; protecting livestock and poultry from diseases of wildlife; and providing improved methods of controlling birth of predators and other animals.

Approach

Under the Section 1433 formula program the USDA has been able to strengthen its animal health research partnership with the State Agricultural Experiment Stations and to extend this partnership to all Colleges and Schools of Veterinary Medicine. Provisions of Sections 1433 are unique in that funds are distributed to the States in relation to each State's livestock importance and its capacity to conduct animal health and disease research. When more than one eligible institution exists within a State, the State's entitlement is distributed to these institutions in accordance with their animal health research capacities. State contributions to expand animal health research are encouraged through a requirement that each State match any Section 1433 funds received annually in excess of \$100,000.

Formula Provisions

Section 1433 provides for support of livestock and poultry disease research in Colleges of Veterinary Medicine and in eligible State Agricultural Experiment Stations. These funds are distributed as follows:

Forty-eight percent are distributed in an amount proportionate to the value of and income to producers from domestic livestock and poultry in each State relative to the total value of and income to producers from domestic livestock and poultry in all States.

	<u>Percent</u>
Livestock Value (USDA-Data)	24
Livestock Income (USDA-Data)	24

Forty-eight percent are distributed in an amount proportionate to the animal health research capacity of the eligible institutions in each State relative to the total animal health capacity in all the States.

	<u>Percent</u>
Expenditures for Animal Health Research (Eligible Institution Data)	24
Scientist Years for Animal Health Research (Eligible Institution Data)	24

Four percent are retained by the Department of Agriculture for administration, program assistance to the eligible institutions, and program coordination.

In a State with two or more eligible institutions, that State's allocation is distributed in the proportion that the animal health research capacities of these institutions bear to the total capacity of the State.

Eligible institutions must provide non-Federal matching funds in States receiving annual amounts in excess of \$100,000 under this authorization.

Current Activities

For fiscal year 1987 a total of \$5,191,248 was distributed to 50 States and Puerto Rico. Funds were distributed to 38 Agricultural Experiment Stations, 13 Agricultural Experiment Stations and Colleges of Veterinary Medicine, and 16 separate Colleges of Veterinary Medicine. Programs of research were received from all institutions.

Recommendations of the Animal Health Science Research Advisory Board are being followed in program administration by CSRS (i.e., scope and priorities of eligible research, determination of research capacity of eligible institutions, and other questions on program administration). In accordance with the advice of the Board, emphasis in this research centers on the solution of high-priority diseases or other health hazards in the production of livestock, poultry, and aquaculture species.

Research is in progress on more than 500 projects seeking solutions to infectious diseases or parasitic problems of food animals and horses. Strong emphasis is being placed on solutions to respiratory, enteric, and reproductive diseases. Other major problems such as mastitis, pseudorabies, BVD, internal parasites, and toxicoses are being investigated. New or improved methods are being developed to control these diseases and other high-priority problems such as shipping fever, salmonellosis, bluetongue, and TGE. New biotechnology procedures including genetic engineering, monoclonal antibody, virus fingerprinting, and subunit immunization are being employed to accelerate needed breakthroughs in diagnosis and prevention of animal pathogens.

Table 2 provides data on the amount of Section 1433 funds that have been received by individual institutions from 1980 to 1988.

Section 1414(c)(1), Special Research Grants in Animal Health

Animal health research under the Special Research Grant Program has placed emphasis on the solution of problems of highest priority and national importance. Grants of up to \$150,000 currently are made for funded projects--permitting indepth studies by some of the Nation's most highly trained, experienced, and productive animal health scientists. Projects are funded with a single grant and expenditures are permitted over a period of up to 5 years, depending upon budgets and work plans as presented in the proposal. This program is administered by the Cooperative State Research Service.

Eligible diseases and their priorities are identified annually by the Animal Health Science Research Advisory Board through recommendations from national livestock and poultry commodity organizations and other groups concerned with animal health. A competitive process with peer panel evaluation of proposals is used in the placement of all grants made under this program.

During the 10 years of competition in Animal Health Special Research Grants (1979-88) there has been a total submission of 4,373 proposals requesting over \$514 million; 648 proposals have received awards totaling \$46,296,523. Table 4 provides a summary of the awards listed by commodity and diseases. Data for 1979 include \$505,756 of Special Research Grant funds awarded noncompetitively to 17 State Agricultural Experiment Stations as Supplementary Research Grants.

The Board reviewed the animal health priority lists submitted for its consideration by the principal national livestock commodity and veterinary medical organizations and USDA recommendations. The Board then developed new guidelines for animal health research priorities that were recommended to CSRS for the Animal Health Special Grants Program for 1989.

The Board recommended that the percentage of funds allocated for each commodity research category remain the same as in 1988. The Board reviewed the specific eligible areas of inquiry under each commodity category of research and made the recommendations as in table 5.

Competitive Research Grants Program (CRGP)

Activities in CRGP involving the competitive research programs in Animal Molecular Biology and Brucellosis, Molecular and Cellular Mechanisms of Animal Growth and Development, and Animal Reproductive Physiology were varied this year. Of the 1,733 proposals CRGP received in fiscal year 1988, 392 were from the animal programs listed above. Approximately 50 percent of the proposals had animal health implications. For all CRGP programs combined, a total of \$40.1 million was awarded through 366 grants, an average of \$110,000 per award. Awards ranged from \$25,000 for 1 year to \$450,000 for 3 years. The success rate on submitted proposals ranged from 12 percent to 25 percent, depending on program area and budget availability. The success rate based upon requested funds was less than 9 percent. Awards were generally one-half of the requested amount. Fifty-three percent of the animal molecular biology program awards supported animal health research in the areas of virology, bacteriology, and immunology. About 40 percent of the growth and development projects contained health-related research in immunology. The program staffs of CSRS and CRGP coordinated closely to avoid duplicate funding of meritorious projects in the Animal Health Special Research Grant Program.

Report from the Center for Veterinary Medicine, Food and Drug
Administration - Norris Alderson

Norris Alderson reported last year that FY 1987 was to be the last year of the extramural minor species research program. This decision was reversed during FY 1987 as additional funds were received and the Center for Veterinary Medicine agreed to restore the minor species cooperative agreement funds in order to complete the program as originally planned. This means that FY 1988 was the last year for the extramural minor species program. Intramurally, the Center for Veterinary Medicine will continue its program addressing those minor species problems which are appropriate for the Center.

One new extramural program, which began in FY 1987, is the aquatic research program. This program is designed to evaluate the disposition of various drugs when used in aquatic species. It places specific emphasis on the metabolism of these compounds as well as potential residues.

As was reported last year also, emphasis is increasing on the development of analytical methods and detection of drugs and chemicals in food and in feeds.

In FY 1987, we funded four new cooperative agreements to evaluate new analytical chemistry procedures in the detection of drug residues in food. The purpose of these agreements is not to necessarily develop specific new chemical methods but rather to evaluate new procedures such as super fluid chromatography, solid phase extraction, tandem mass specs, and immunoassays as procedures to increase our ability to monitor food for drug residues.

At the same time, we have an intensive program of research developing specific methods for which needs have been identified. We have evaluated the methodology for all of the currently approved drugs and found that there are many currently approved drugs whose methods do not meet today's standards for acceptance of analytical methods. On the high-priority list are approximately 40 compounds. These specific methods are being developed in our own FDA labs both at Beltsville and in our district labs. We are also cooperating with USDA in its program of methods development. Some extramural funds will also be directed toward specific methods.

Another item in our extramural program beginning in FY 1988 is the evaluation of bound residues. The purpose of this program is to evaluate the level of residues which are not detected in normal analytical procedures due to specific binding.

TABLE 1

ANIMAL HEALTH RESEARCH FUNDS 1979-88

<u>Item</u>	<u>FY 1979</u>	<u>FY 1980</u>	<u>FY 1981</u>	<u>FY 1982</u>	<u>FY 1983</u>	<u>FY 1984</u>	<u>FY 1985</u>	<u>FY 1986</u>	<u>FY 1987</u>	<u>FY 1988</u>
	<u>Dollars</u>									
Formula Funds	5,000	6,000	6,500	5,760	5,760	5,760	5,760	5,191	5,191	
(Sec. 1433)										
Spec. Research Grants										
Animal Health	10,000	7,000	5,050	7,156	7,156	7,156	6,000	5,408	5,408	
Minor Use Animal Drugs	---	---	---	240	240	240	240	229	229	
Total	15,000	13,000	11,550	13,156	13,156	13,156	12,000	10,828	10,828	

Table 2
Animal Health (Section 1433) Fund Allocations
FY 1980 to 1988

AES = Agricultural Experiment Station
SVM = Schools and Colleges of Veterinary Medicine
* = AES and SVM combined

	1980	1981	1982	1983	1984	1985	1986	1987	1988
ALABAMA									
AES, Auburn Univ.	\$104,005	\$108,063	\$89,645	\$88,463	\$84,301	\$86,828	\$ 75,960	\$76,229	\$70,585
SVM, Auburn Univ.	\$27,320	\$23,668	\$21,560	\$21,006	\$22,391	\$29,764	\$ 32,714	\$32,829	\$42,899
SVM, Tuskegee Univ.	\$24,325	\$26,886	\$20,435	\$21,103	\$16,454	\$10,998	\$ 5,932	\$5,953	\$ 3,703
ALASKA									
AES, Univ. of AK	\$9,602	\$11,589	\$12,503	\$15,053	\$13,924	\$9,318	\$8,930	\$8,948	\$ 9,993
ARIZONA									
AES, Univ. of AZ	\$66,874	\$73,426	\$60,007	\$59,239	\$54,686	\$57,164	\$56,615	\$57,238	\$61,041
ARKANSAS									
AES, Univ. of AR	\$83,340	\$91,359	\$81,957	\$81,621	\$79,001	\$78,085	\$72,216	\$73,241	\$73,869
CALIFORNIA									
AES, U. of CA-Berk	\$218,204	\$232,257	\$203,790	\$212,367	\$226,345	\$245,028	\$235,486	\$237,542	\$236,012
SVM, U. of CA-Dav	\$85,821	\$160,537	\$177,166	\$199,317	\$188,341	\$196,346	\$183,479	\$185,029	\$178,737
COLORADO									
AES, CO State Univ.	*232,980	*260,767	*276,285	*260,477	*262,454	*230,633	*250,439	*252,333	\$236,815
SVM, CO State Univ.									
CONNECTICUT									
AES, U. of CT-Storrs	\$16,840	\$17,924	\$20,041	\$22,256	\$24,065	\$23,806	\$22,348	\$22,488	\$23,315
DELAWARE									
AES, U. of Delaware	\$14,901	\$16,814	\$17,401	\$16,776	\$16,187	\$14,380	\$15,091	\$15,694	\$17,144
FLORIDA									
AES, Univ. of FL	\$94,598	\$98,792	\$82,307	\$81,509	\$79,028	\$82,885	\$77,199	\$77,386	\$82,091
SVM, Univ. of FL	\$14,011	\$15,811	\$15,821	\$23,915	\$34,538	\$49,013	\$59,707	\$59,851	\$75,341

GEORGIA	AES, U. of GA	1980	1981	1982	1983	1984	1985	1986	1987	1988
		\$46,979	\$49,398	\$40,281	\$37,903	\$33,989	\$29,647	\$22,818	\$22,722	\$20,374
	SVM, U. of GA	\$130,171	\$137,082	\$124,516	\$130,479	\$136,986	\$143,203	\$129,422	\$128,880	\$125,952
HAWAII	AES, U. of HI	\$8,481	\$9,156	\$8,341	\$8,458	\$8,314	\$7,943	\$7,482	\$7,308	\$ 7,102
IDAHO	AES, U. of ID	\$73,323				\$71,230	\$64,687	\$53,990	\$53,654	\$45,306
		\$27,517	*104,670	*85,447	*82,667	\$13,487	\$15,638	\$19,085	\$18,965	\$21,078
ILLINOIS	SVM, U. of IL	*200,909	*200,150	*167,905	\$164,312	\$171,958	*179,934	\$169,195	*167,401	*163,337
INDIANA	SVM, Purdue Univ.	*131,077	*141,379	*120,908	*123,647	*123,794	*123,252	\$109,865	*109,459	*103,382
IOWA	AES, IA State U.	\$35,405	\$42,338	\$51,691	\$64,009	\$70,018	\$67,881	\$59,179	\$56,794	\$51,920
		\$311,942	\$326,415	\$280,350	\$261,622	\$254,464	\$285,524	\$247,015	\$236,975	\$233,472
KANSAS	SVM, KS State	*194,993	*206,457	*185,103	*186,541	*190,193	*184,651	*172,068	*175,000	*171,953
KENTUCKY	AES, U. of KY	\$107,071	\$109,265	\$93,303	\$98,340	\$98,166	\$98,092	\$92,813	\$92,429	\$93,477
LOUISIANA	AES, LA St. U.	\$101,978	\$110,564	\$94,090	\$89,607	\$84,321	\$80,562	\$73,044	\$73,051	\$69,563
		\$11,489	\$15,512	\$17,501	\$25,013	\$30,105	\$30,042	\$25,012	\$25,014	\$20,949
MAINE	AES, U. of ME	\$23,455	\$25,046	\$24,622	\$22,675	\$2,012	\$18,102	\$16,108	\$16,074	\$16,174
MARYLAND	AES, U. of MD	\$64,442	\$68,862	\$54,976	\$57,058	\$50,065	\$48,548	\$46,140	\$46,867	\$46,496
		\$15,787	\$15,584	\$10,449	\$0	\$0	\$0	\$0	\$0	\$0

	1980	1981	1982	1983	1984	1985	1986	1987	1988
MASSACHUSETTS									
AES, Univ. of MA	\$23,705	\$21,738	\$16,945	\$15,670	\$12,126	\$10,620	\$9,695	\$9,676	\$12,501
SVM, Tufts Univ.	\$0	\$28,052	\$36,068	\$36,849	\$56,192	\$51,016	\$43,757	\$43,670	\$29,079
MICHIGAN									
AES, MI St. Univ.		\$91,319	\$68,783						
SVM, MI St. Univ.	*148,301	\$51,366	\$47,294	*110,149	*107,814	*103,969	\$95,376	*96,236	*96,417
MINNESOTA									
AES, U. of MN	\$81,970	\$84,055	\$76,364	\$70,268	\$74,718	\$82,115	\$84,221	\$82,919	\$89,310
SVM, U. of MN	\$125,357	\$144,017	\$124,668	\$132,156	\$123,487	\$111,182	\$94,497	\$93,043	\$81,888
MISSISSIPPI									
AES, MS St. U.	*75,867	*81,045	*76,879	\$69,523	\$62,566	*52,007	\$50,876	*51,331	*60,018
MISSOURI									
AES, U. of MO	\$75,175	\$66,293	\$45,869	\$42,073	\$61,934	\$73,452	\$54,115	\$53,153	\$37,493
SVM, U. of MO	\$87,841	\$121,398	\$123,728	\$121,225	\$93,589	\$67,853	\$93,453	\$91,790	\$119,934
MONTANA									
AES, MT St. U.	\$106,421	\$111,624	\$89,650	\$83,889	\$77,041	\$77,156	\$78,952	\$79,178	\$81,297
NEBRASKA									
AES, U. of NE	\$180,942	\$203,947	\$184,801	\$190,134	\$191,682	\$193,987	\$180,744	\$184,744	\$178,693
NEVADA									
AES, U. of NV	\$30,751	\$30,547	\$23,947	\$21,672	\$18,647	\$17,365	\$17,280	\$17,629	\$19,664
NEW HAMPSHIRE									
AES, U. of NH	\$16,872	\$16,206	\$12,753	\$12,482	\$11,678	\$11,190	\$10,135	\$10,100	\$10,279
NEW JERSEY									
AES, Rutgers U.	\$31,407	\$32,008	\$27,466	\$28,707	\$26,715	\$26,978	\$21,357	\$21,308	\$21,863
NEW MEXICO									
AES, NM St. U.	\$49,104	\$50,407	\$43,831	\$39,689	\$38,421	\$41,159	\$40,068	\$40,874	\$41,400
NEW YORK									
AES, Cornell U.	\$24,621	\$38,475	\$43,554	\$51,701	\$50,473	\$51,250	\$54,007	\$53,703	\$58,868
SVM, Cornell U.	\$203,053	\$223,216	\$188,889	\$199,730	\$206,594	\$221,233	\$212,026	\$210,833	\$216,398

NORTH CAROLINA AES, NC St. U.	<u>1980</u> *125,158	<u>1981</u> *126,026	<u>1982</u> *101,339	<u>1983</u> *97,640	<u>1984</u> *97,193	<u>1985</u> *100,061	<u>1986</u> *100,096	<u>1987</u> *102,061	<u>1988</u> *110,548
NORTH DAKOTA AES, ND St. U.	\$67,213	\$69,565	\$57,879	\$56,734	\$57,644	\$58,502	\$56,150	\$56,680	\$55,854
OHIO AES, OH St. U. SVM, OH St. U.	\$98,576 \$51,921	\$89,550 \$60,966	\$65,621 \$69,974	\$61,952 \$70,324	\$64,874 \$70,147	\$70,716 \$53,379	\$69,994 \$46,557	\$70,441 \$46,857	\$78,069 \$35,292
OKLAHOMA AES, OK St. U. SVM, OK St. U.	\$148,637 \$6,145	\$157,722 \$5,066	*130,813	*129,962	*123,764	*125,298	\$111,228	*111,547	\$110,553
OREGON AES, OR St. U. SVM, OR St. U.	\$58,795 \$54,244	\$66,998 \$59,314	\$63,963 \$50,978	\$68,444 \$40,850	\$62,117 \$37,633	\$53,015 \$42,804	\$47,354 \$43,533	\$47,615 \$43,774	\$54,274 \$41,113
PENNSYLVANIA AES, U. of PA SVM, U. of PA Lehigh Univ.	\$67,793 \$74,501 \$2,791	\$64,985 \$97,406 \$0	\$55,225 \$105,426 \$0	\$52,832 \$117,555 \$0	\$52,447 \$119,287 \$0	\$52,337 \$108,886 \$0	\$52,983 \$95,497 \$0	\$52,638 \$94,875 \$0	\$58,668 \$86,648 \$0
PUERTO RICO AES, U. of PR	\$19,280	\$16,935	\$16,008	\$16,418	\$15,292	\$14,543	\$13,217	\$13,218	\$12,508
RHODE ISLAND AES, U. of RI	\$12,199	\$15,231	\$12,658	\$13,549	\$14,402	\$14,910	\$12,428	\$12,413	\$ 9,640
SOUTH CAROLINA AES, Clemson U.	\$28,671	\$28,397	\$23,241	\$23,012	\$23,754	\$23,555	\$21,680	\$21,802	\$21,305
SOUTH DAKOTA AES, SD St. U.	\$118,702	\$125,871	\$109,615	\$105,878	\$101,127	\$96,112	\$88,582	\$87,493	\$90,515
TENNESSEE AES, U. of TN SVM, U. of TN	*73,301	*82,137	*73,990	*76,904	*74,629	*70,441	*62,737	*63,243	*63,812
TEXAS AES, TX A&M U. SVM, TX A&M U.	*425,692	*436,027	*343,157	*319,658	*331,193	*346,564	*347,878	*350,953	\$355,803

UTAH	1980	1981	1982	1983	1984	1985	1986	1987	1988
AES, UT St. U.	\$52,768	\$60,889	\$61,031	\$61,301	\$60,935	\$57,344	\$49,812	\$49,863	\$46,344
VERMONT									
AES, U. of VT	\$19,305	\$19,674	\$17,148	\$18,253	\$18,977	\$18,298	\$16,664	\$16,345	\$16,505
VIRGINIA									
AES, VPI & SU	*85,377	*95,619	*86,636	*90,487	*84,512	*90,624	*83,696	*85,449	*93,564
SVM, VPI & SU									
WASHINGTON									
AES, WA St. U.	\$37,457	\$35,524	\$28,038	\$27,741	\$30,950	\$34,631	\$35,171	\$35,206	\$39,857
SVM, WA St. U.	\$94,349	\$115,483	\$110,128	\$115,258	\$111,666	\$116,010	\$104,469	\$104,571	\$101,345
WEST VIRGINIA									
AES, WV Univ.	\$21,579	\$23,531	\$18,317	\$17,463	\$16,035	\$16,267	\$14,165	\$14,216	\$13,317
WISCONSIN									
AES, U. of WI	\$225,816	\$239,723	\$215,841	*212,814	*213,497	*208,846	*196,921	*193,910	*195,945
SVM, U. of WI									
WYOMING									
AES, U. of WY	\$50,106	\$51,986	\$43,044	\$42,162	\$42,203	\$43,265	\$40,525	\$40,539	\$42,587
TOTAL	\$5,760,000	\$6,240,000	\$5,529,600	\$5,518,541	\$5,496,422	\$5,474,304	\$5,476,000	\$5,191,248	\$5,191,248

TABLE 3

ANIMAL HEALTH SPECIAL RESEARCH GRANTS AWARDS
Fiscal Years 1979-1988

Commodity and Disease	1979-1985		1986		1987		1988		Total	
	Projects	Funds	Projects	Funds	Projects	Funds	Projects	Funds	Projects	Funds
BEEF CATTLE										
Respiratory Diseases	56	\$6,992,755	7	\$ 994,418	7	\$ 994,418	10	\$1,235,788	80	\$10,217,379
Reproductive Diseases										
(including Anestrus)	31	\$3,871,022	4	\$ 466,692	5	\$ 611,584	4	\$ 502,030	44	\$ 5,451,328
Enteric Diseases	34	\$3,376,148	0	---	0	---	2	\$ 245,000	36	\$ 3,621,148
Metabolic Diseases	5	\$ 436,350	1	\$ 134,955	1	\$ 134,955	0	---	7	\$ 706,260
Toxicosis	5	\$ 456,162	0	---	0	---	0	---	5	\$ 456,162
Bluetongue	6	\$ 748,510	1	\$ 144,892	0	---	3	\$ 377,155	10	\$ 1,270,557
Internal Parasites	21	\$2,239,670	1	\$ 135,418	1	\$ 135,418	2	\$ 265,983	25	\$ 2,776,489
External Parasites	12	\$1,092,951	0	---	0	---	2	\$ 191,574	14	\$ 1,284,525
Other Diseases	2	100,920	0	---	0	---	0	---	2	\$ 100,920
SUBTOTAL	172	\$19,314,488	14	\$1,876,375	14	\$1,876,375	23	\$2,817,530	223	\$25,884,768

ANIMAL HEALTH SPECIAL RESEARCH GRANTS AWARDS
Fiscal Years 1979-1988

Commodity and Disease	1979-1985		1986		1987		1988		Total	
	Projects	Funds	Projects	Funds	Projects	Funds	Projects	Funds	Projects	Funds
DAIRY CATTLE										
Mastitis	36	\$2,941,772	3	\$ 320,916	3	\$ 320,916	2	\$ 265,557	44	\$3,849,161
Respiratory Diseases	12	\$1,026,585	1	\$ 87,250	1	\$ 87,250	0	---	14	\$1,201,085
Reproductive Diseases	24	\$2,589,379	2	\$ 300,000	2	\$ 300,000	0	---	28	\$3,189,379
(including Anestrus)	11	\$ 880,275	4	\$ 454,404	4	\$ 454,404	0	---	19	\$1,789,083
Enteric Diseases	6	\$ 502,805	1	\$ 144,142	1	\$ 144,142	1	\$ 100,000	9	\$ 891,089
Metabolic Diseases	1	\$ 132,414	0	---	0	---	0	---	1	\$ 132,414
Bluetongue	2	\$ 73,245	0	---	0	---	0	---	2	\$ 73,245
Internal Parasites	1	\$ 58,500	0	---	0	---	0	---	1	\$ 58,500
External Parasites	4	\$ 384,260	0	---	0	---	0	---	4	\$ 384,260
SUBTOTAL	97	\$8,589,235	11	\$1,306,712	11	\$1,306,712	3	\$ 365,557	122	\$11,568,216

ANIMAL HEALTH SPECIAL RESEARCH GRANTS AWARDS
Fiscal Years 1979-1988

Commodity and Disease	1979-1985		1986		1987		1988		Total	
	Projects	Funds	Projects	Funds	Projects	Funds	Projects	Funds	Projects	Funds
POULTRY										
Respiratory Diseases	40	\$2,902,637	4	\$ 270,417	4	\$ 411,500	5	\$ 398,333	53	\$3,982,887
Skeletal Diseases	5	\$ 573,349	1	\$ 102,142	0	---	0	---	6	\$ 675,491
Enteric Diseases	10	\$ 750,359	2	\$ 159,250	1	\$ 133,185	1	\$ 79,751	14	\$1,122,545
Neoplastic Diseases	6	\$ 409,302	1	\$ 75,000	0	---	0	---	7	\$ 484,302
(Incl. Marek's Dis.)										
Internal Parasites	4	\$ 405,782	0	---	0	---	0	---	4	\$ 405,782
Toxicosis	4	\$ 355,428	0	---	0	---	0	---	4	\$ 355,428
Other Diseases	5	\$ 593,817	1	\$ 93,275	2	\$ 158,399	2	\$ 225,000	10	\$1,070,491
SUBTOTAL	74	\$5,990,674	9	\$ 700,084	7	\$ 703,084	8	\$ 703,084	98	\$8,096,926

ANIMAL HEALTH SPECIAL RESEARCH GRANTS AWARDS
Fiscal Years 1979-1988

Commodity and Disease	1979-1985		1986		1987		1988		Total	
	Projects	Funds	Projects	Funds	Projects	Funds	Projects	Funds	Projects	Funds
SHEEP & GOATS										
Respiratory Diseases	3	\$ 286,426	0	---	1	\$ 90,375	1	\$ 138,785	5	\$ 515,586
Predator Control	6	\$ 382,404	0	---	0	---	0	---	6	\$ 382,404
Reproductive Diseases	4	\$ 250,920	0	---	0	---	0	---	4	\$ 250,920
Bluetongue	4	\$ 402,316	0	---	1	\$ 150,000	1	\$ 40,000	6	\$ 592,316
Caseous Lymphadenitis	4	\$ 391,368	0	---	0	---	0	---	4	\$ 391,368
Contagious Ecthyma	1	\$ 147,063	0	---	0	---	0	---	1	\$ 147,063
Internal Parasites	6	\$ 480,056	0	---	0	---	0	---	6	\$ 480,056
Other Diseases	4	\$ 192,368	2	\$ 270,417	1	\$ 270,417	2	\$ 131,632	9	\$ 864,834
SUBTOTAL	32	\$2,532,921	2	\$ 270,417	3	\$ 510,792	4	\$ 310,417	41	\$3,624,547

ANIMAL HEALTH SPECIAL RESEARCH GRANTS AWARDS
Fiscal Years 1979-1988

Commodity and Disease	1979-1985		1986		1987		1988		Total	
	Projects	Funds	Projects	Funds	Projects	Funds	Projects	Funds	Projects	Funds
SWINE										
Enteric Diseases	32	\$2,553,445	4	\$ 315,021	4	\$ 459,172	3	\$ 446,390	43	\$3,774,028
Respiratory Diseases	15	\$1,505,303	2	\$ 270,417	2	\$ 275,852	2	\$ 254,267	21	\$2,305,839
Reproductive Diseases	9	\$ 921,380	1	\$ 91,600	2	\$ 246,311	2	\$ 130,705	14	\$1,389,996
Pseudorabies	7	\$ 935,245	1	\$ 149,464	0	---	0	---	8	\$1,084,709
MMA	8	\$ 627,713	1	\$ 150,000	0	---	0	---	9	\$ 777,713
Internal Parasites	8	\$ 643,000	0	---	0	---	1	\$ 149,973	9	\$ 792,973
External Parasites	2	\$ 187,980	0	---	0	---	0	---	2	\$ 187,980
Toxicosis	8	\$ 611,963	0	---	0	---	0	---	8	\$ 611,963
Skeletal Diseases (Lameness)	4	\$ 320,386	0	---	0	---	0	---	4	\$ 320,386
SUBTOTAL	93	\$8,306,415	9	\$ 976,502	8	\$ 981,335	8	\$ 981,335	118	\$11,245,587

ANIMAL HEALTH SPECIAL RESEARCH GRANTS AWARDS
Fiscal Years 1979-1988

Commodity and Disease	1979-1985		1986		1987		1988		Total	
	Projects	Funds	Projects	Funds	Projects	Funds	Projects	Funds	Projects	Funds
HORSES										
Respiratory Diseases	10	\$ 746,485	1	\$ 107,205	0	---	0	---	11	\$ 853,690
Enteric Diseases	3	\$ 231,255	0	---	2	\$ 162,250	2	\$ 162,250	7	\$ 555,755
Musculoskeletal Diseases	4	\$ 466,000	0	---	0	---	0	---	4	\$ 466,000
Internal Diseases	2	\$ 229,270	1	\$ 55,045	0	---	0	---	3	\$ 284,315
SUBTOTAL	19	\$1,673,010	2	\$ 162,250	2	\$ 162,250	2	\$ 162,250	25	\$2,159,760

ANIMAL HEALTH SPECIAL RESEARCH GRANTS AWARDS
Fiscal Years 1979-1988

<u>Commodity and Disease</u>	<u>1979-1985</u>		<u>1986</u>		<u>1987</u>		<u>1988</u>		<u>Total</u>	
	Projects	Funds	Projects	Funds	Projects	Funds	Projects	Funds	Projects	Funds
AQUACULTURE										
Infectious Diseases	13	\$ 971,180	3	\$ 108,167	2	\$ 108,167	2	\$ 108,167	20	\$1,295,681
Parasites	2	\$ 170,777	0	---	0	---	0	---	2	\$ 170,777
SUBTOTAL	15	\$1,141,957	3	\$ 108,167	2	\$ 108,167	2	\$ 108,167	22	\$1,466,458

ANIMAL HEALTH SPECIAL RESEARCH GRANTS AWARDS
Fiscal Years 1979-1988

	<u>1979-1985</u>		<u>1986</u>		<u>1987</u>		<u>1988</u>		<u>Total</u>	
	Projects	Funds	Projects	Funds	Projects	Funds	Projects	Funds	Projects	Funds
502	\$47,548,700	50	\$5,400,507	47	\$5,648,715	50	\$5,448,340	649	\$64,046,262	

TOTAL RESEARCH
FOR ALL COMMODITIES

ANIMAL HEALTH SPECIAL RESEARCH GRANTS
FISCAL YEAR 1988

AREA	NUMBER OF PROPOSALS	PROPOSALS FUNDED	SUCCESS RATE	AMOUNT REQUESTED	AMOUNT GRANTED	COMMODITY
<u>BEEF AND DAIRY CATTLE</u>						
Reproductive Diseases	38	7	18%	\$4,652,046	\$879,185	Beef \$519,185 Dairy \$360,000
Respiratory Diseases	42	10	24%	\$5,652,693	\$1,235,788	Beef \$835,788 Dairy \$400,000
Enteric Diseases	26	1	4%	\$3,341,376	\$135,000	Beef \$35,000 Dairy \$100,000
Metabolic Diseases	9	2	22%	\$1,176,886	\$210,000	Beef \$110,000 Dairy \$100,000
Parasitic Diseases	17	4	24%	\$2,224,767	\$457,557	Beef \$407,820 Dairy \$49,737
Mastitis	14	2	14%	\$1,922,443	\$265,557	Beef \$0 Dairy \$265,557
						tot. cattle \$3,183,087
<u>SWINE</u>						
Enteric Diseases	21	3	14%	\$2,998,654	\$446,390	
Respiratory Diseases	16	2	13%	\$2,079,215	\$254,267	
Reproductive Diseases	5	2	40%	\$598,030	\$130,705	
Metabolic & Musculo-Skeletal Diseases	6	0	0%	\$747,798	\$0	
Parasitic Diseases	4	1	25%	\$591,998	\$149,973	
					total	\$981,335
<u>POULTRY</u>						
Respiratory Diseases	27	5	19%	\$3,000,941	\$398,333	
Metabolic & Immunologic Diseases	9	2	22%	\$1,325,828	\$225,000	
Enteric Diseases	10	1	10%	\$1,426,494	\$79,751	
Musculo-Skeletal Diseases	2	0	0%	\$206,515	\$0	
					total	\$703,084
<u>SHEEP & GOATS</u>						
	13	3	23%	\$1,572,305	\$270,417	
					total	\$270,417
<u>HORSES</u>						
	27	2	7%	\$2,966,127	\$162,250	
					total	\$162,250
<u>AQUACULTURE</u>						
	13	2	15%	\$896,072	\$108,167	
					total	\$108,167
TOTALS ---	299	49	16%	\$37,380,188	\$5,408,340	\$5,408,340

Table 5

Specific Areas and Appropriate Percentages
Recommended for Funding in Special Grants

<u>COMMODITY</u>	<u>PERCENT OF FUNDS</u>
Beef cattle - list the following subcategories as eligible areas of research.	41.0
1. Respiratory diseases	
2. Reproductive diseases	
3. Digestive and enteric diseases	
4. Parasitic diseases	
5. Metabolic diseases with no specific diseases identified as high priorities	
Dairy Cattle	18.0
1. Mastitis	
2. Reproductive diseases	
3. Respiratory diseases	
4. Digestive and enteric diseases	
5. Metabolic diseases with no specific diseases identified as high priorities	
Swine	18.0
1. Enteric diseases	
2. Respiratory diseases	
3. Reproductive diseases	
4. Metabolic and musculoskeletal disease	
5. Parasitic diseases	
Poultry	13.0
1. Respiratory diseases	
2. Metabolic and immunologic diseases	
3. Enteric diseases	
4. Skeletal diseases	
Sheep and Goats	5.0
1. Musculoskeletal diseases	
2. Respiratory diseases	
3. Digestive and enteric diseases	
4. Internal parasitic diseases with no specific diseases identified as high priorities	
Horses	3.0
1. Respiratory diseases	
2. Digestive and enteric diseases	
3. Reproductive diseases	
4. Musculoskeletal diseases with no specific diseases identified as high priorities	
Aquaculture	2.0
1. Infectious diseases	
2. Parasitic diseases	

Swine Disease Research Needs

National Pork Producers Council

Presented by David Meeker (1987)

Since 1971, the National Pork Producers Council (NPPC) has coordinated a system of providing seed money for research projects that meet on-the-farm needs. Priority needs are developed biannually through the polling of a random sample of NPPC's membership, and through discussions of a producer policy development group.

A committee of well respected producers and researchers selected from across the nation take the producer-developed priorities and match them with dozens of project proposals that are judged by the committee on their feasibility, their scientific merit, and how they fit into the priorities that have been established by pork producers.

Since 1971, when the program started, \$2,300,000 in producer checkoff funds have been invested in nearly 330 separate research projects. In most cases, the producer funding is enhanced by additional funding from other sources, so that the total impact is much greater than the initial producer grant.

In the years ahead, fierce competition for the consumer protein dollar means that research will have an increasing impact on the success or failure of pork industry efforts.

The NPPC's Research Grants Program can provide the pork industry the opportunity for meaningful and targeted funding of important research projects that will continue to meet pork producer needs.

The following categories have been identified by producers as important research areas:

PRODUCTION RESEARCH

- A. Prevention and Treatment of Disease
 - 1. Respiratory
 - 2. Enteric
 - 3. Reproductive
 - 4. Structural
 - 5. Parasitic
 - 6. Other
- B. Breeding and Genetics
 - 1. Disease Resistance
 - 2. Selection Procedures
 - 3. Improving Carcass Composition
 - 4. Growth, Development and Lactation
 - 5. Crossbreeding
- C. Nutrition
 - 1. Nutrition and Nutrient Requirements
 - 2. Feed Additive Alternatives
 - 3. Total Herd Feed Efficiency
 - 4. Feed Processing and Quality Control

- D. Reproductive Physiology
 - 1. Litter Size
 - 2. Reproductive Failure
 - 3. Longevity of Breeding stock
 - 4. Manipulation of Gametes and Embryos
 - 5. Semen Quality and Artificial Insemination
- E. Animal Care and Environmental Management
 - 1. Air Quality
 - 2. Stress Quantification
 - 3. Worker Health
 - 4. Animal Behavior
 - 5. Facilities and Equipment Design
- F. Market Technology
 - 1. Food Safety
 - 2. Consumer Acceptance and Perceptions
 - 3. Pork Value
 - 4. Identification
 - 5. Predicting Composition
- G. Economics
 - 1. Economic Impact of New Technologies
 - 2. Marketing Alternatives, Strategies and Risk Management
 - 3. Structure of the Industry
 - 4. Computer Applications for Profitability
- H. New Concepts

Above, we have described producers research priorities on their descriptions of on-farm production problems. However, NPPC recognizes the need for some investment of long-term basic research that could be of a high risk nature. New, innovative approaches to production technology may sometimes seem too futuristic for on-farm problem solving. However, these novel ideas and new concepts may yield revolutionary results to benefit producers. Thus, the NPPC Research Committee is requesting proposals of this nature and will allocate a portion of the research funds to this area.

NEW PRODUCT RESEARCH

Producers consistently name new product development among the top research priorities. Packers and processors spend several million dollars each year on research and development of new pork products to better their competition. It is important that producer-funded research in these areas be supportive of private sector efforts. Basic knowledge enhancing pork's usefulness, available to packers, processors and the food industry, should benefit producers.

Checkoff funds intended for research in the area of new pork product development are administered by the National Live Stock and Meat Board which will begin a grants program in the fall of 1987.

Researchers interested in receiving information about this program should write to: Dr. Janet Williams, Associate Director, Product and Development/Research, National Live Stock and Meat Board, 444 North Michigan Avenue, Chicago, Illinois 60611.

NATIONAL PORK PRODUCERS COUNCIL
RESEARCH PROPOSAL REQUEST INFORMATION FOR 1988-89 FUNDING

The National Pork Producers Council invites research personnel to prepare and present research proposals on the following pork production, health and marketing areas:

- A. Prevention and Treatment of Diseases
- B. Breeding and Genetics
- C. Nutrition
- D. Reproduction Physiology
- E. Animal Care and Environmental Management
- F. Market Technology
- G. Economics
- H. New Concepts

Depending on budget and number of projects approved by our Research Project Selection Committee, up to \$15,000 may be allocated per project proposal. NPPC looks favorably upon interdepartmental cooperation and multidisciplinary approaches to research problems. Some projects will not fit easily into one area, but may bridge two or more of the listed research areas.

Proposals which are accepted will receive funding for one year with one additional year funding possible, depending upon status report and renewal of request in the above/below format, annually. The NPPC also strives to secure funding from other sources at state and national levels to further implement swine research under these categories.

OUTLINE FOR PROPOSAL

1. Cover Page
 - a. Title
 - b. Area of research (A to H above)
 - c. Principal investigator (name, degrees and title)
Department
University
Address
Phone number
(please do not include personal or curriculum vitae information)
 - d. Co-investigators
 - e. Dollar amount requested
 - f. Funding request (new or 2nd year)
 - g. Indication of proposal copy sent to state pork producer association office
2. Current Status of Problem
3. Value of Proposed Research to the Swine Industry
4. Current Related Research by Investigator and Others. It is important that new projects be coordinated with existing research to avoid unnecessary duplication
5. List of References
6. Immediate Objectives

7. Procedures to Achieve These Objectives
8. Future Objective
9. Schedule for Proposed Research
10. Budget for Project (overhead and indirect costs will NOT be covered by research funds)
 - a. Costs to be covered by this grant. Costs must be indicated in a 3-column format, i.e. University, NPPC, Total
 - b. Other funding requested of anticipated for this project

GENERAL INFORMATION

Well qualified scientists and producers serve on the NPPC Research Project Selection Committee and use eight points to review projects. The producers will evaluate the proposals on:

1. Relevance to the pork industry
2. Whether the research matches producer priorities
3. Practicality
4. Time frame

The scientists will evaluate the proposals on:

5. Experimental design and methods
6. The researcher's understanding of the problem
7. Likelihood of achieving research goals and potential for application
8. Overall scientific value of proposed research

SPECIFIC INFORMATION

Please follow above outline. Limit proposal to not more than seven pages, double spaced, including budget. Only the first seven pages will be evaluated. If you are requesting renewed funding, please send a separate progress report in addition to the research proposal. Send 15 copies of your proposal by December 1, 1987 to:

David Meeker, Ph.D.
Director of Research and Education
National Pork Producers Council
Box 10383
Des Moines, Iowa 50306

North Central Advisory Committee (NCA-2) 1984

1. Enteric diseases
2. Respiratory diseases
3. Pseudorabies
4. Perinatal Mortality
5. Effects of environmental factors
6. Arthritis
7. Swine Abscesses
8. Toxic diseases
9. Control measures for internal and external parasites

National Turkey Federation

Turkey Health Research Priorities - 1988

I. General Statement

The value of sales from the production of turkeys in 1987 was \$1.70 billion. The combined total value of sales of broilers, eggs and turkeys was approximately \$11.2 billion. Turkeys represent 15 per cent of the total sales (USDA-Agricultural Statistic Board). The total meat and poultry per capita consumption (retail weight) in 1987 was 15.2 lbs. of turkeys, 60.1 lbs. of broilers, 58.8 lbs. of pork, 75.5 lbs. of beef and 2.8 lbs. of veal and lamb (USDA).

Highly pathogenic avian influenza was not recognized in commercial turkeys and chickens in U.S. in 1987. Outbreaks of avian influenza were reported in turkeys in four states. There is always the concern that highly pathogenic mutants may emerge because H5N2 isolates have been made from poultry in live bird markets in 1987. Velogenic strains of Newcastle disease virus were isolated from imported pet birds but not from commercial poultry. There were no outbreaks of chlamydiosis in turkeys that caused human exposure in processing plant personnel. Rhinotracheitis in turkeys in Europe continues to be a problem, but there is not evidence the disease has become established in U.S. The commercial turkey industry is vulnerable to highly pathogenic infectious agents and the need for ongoing research activities is essential at the state and federal levels.

Salmonellosis continues to receive widespread publicity because of its public health significance. Salmonella enteritidis outbreaks in humans have significantly increased according to U.S. Public Health Service. Meat and poultry products are recognized as important vehicles of salmonellas to humans. Research efforts on the problem at the production level in cattle, swine and poultry have been increased by USDA-ARS. The poultry industry has increased support of research projects at the state level. However, there is continued need of research support at the production and post harvest levels to develop programs to reduce salmonellosis in poultry and livestock.

The losses from disease and management related problems and lowered production efficiencies cost the turkey industry \$300 million per year. There has been little progress over the past 10 years in reducing the death loss in market turkeys and breeding stock.

The objectives of this report are to identify specific categories and diseases of turkeys that need increased investment in research in order to improve the production efficiency of the turkey industry and provide the American consumer with a safe and wholesome product. The information for this report was collected from the members of the National Turkey Federation Turkey Health Committee and American Association of Avian Pathologists Poultry Health Advisory Committee and other industry associated people.

II. Specific Categories and Diseases

Specific categories and certain diseases have been targeted because of their relationship with significant losses in market turkeys and breeder flocks. Under field conditions disease problems are often complex situations involving a combination of diseases, nutrition, management practices and environmental conditions.

A. Specific Categories

1. Respiratory Diseases

Outbreaks of respiratory infections usually involve multiple infections complicated by environmental and management conditions. Approximately 50 percent of the death losses in young turkeys are associated with respiratory and complicated infections and compromised immune system. There is need for basic studies in areas of biotechnology and immunobiology and the development of improved diagnostic tests and immunizing agents. There is need for increased studies on the interaction between genetics and environment on disease resistance.

2. Enteric Diseases

Enteric diseases are responsible for approximately 10 percent of the losses in commercial production resulting in poor utilization of nutrients with uneven and poor growth. There is often interaction of infectious agents and environmental, nutrition and management practices. Salmonellosis continue to need new approaches to control these diseases as well as coccidiosis and hemorrhagic enteritis. A number of viral agents have been isolated. Methods to prevent and control these viral infections are critical.

3. Skeletal Diseases

Fastgrowing strains are placing more stress on the skeletal system. Multi disciplinary approach is needed involving genetic, nutritional and management factors and interaction of infectious agents.

4. Immune System

The turkey gives a notoriously poor immunological response to antigenic agents. More research is needed to understand its immune system, to establish proper immunizing procedures, identification of factors that contribute to immunodepression or lack of immune response and persistence of immunity. Hemorrhagic enteritis virus appears to play an important role in its adverse effect on the immune response of the turkey.

5. Mycotoxicosis

B. Specific Targeted Diseases

1. Respiratory diseases

- a. Colibacillosis
- b. Pasteurellosis
- c. Avian influenza
- d. Rhinotracheitis
- e. Aspergillosis

2. Enteric disease

- a. Salmonellosis
- b. Viral enteritis
- c. Coccidiosis
- d. Hemorrhagic enteritis

3. Skeletal diseases
 - a. Developmental and metabolic disorders
 - i Tibial dyschondroplasia
 - b. Infectious disorders
 - i Osteomyelitis
4. Immunologic diseases
 - a. Hemorrhagic enteritis
5. Mycotoxicosis

IMPORTANT TURKEY HEALTH PROBLEMS - 1988 - (Table 1)

PRIORITIES FOR RESEARCH

Health Problems - Turkey Breeders

1. Respiratory diseases

- | | |
|------------------------|------------------------------------|
| a. Pasteurellosis | |
| b. Avian influenza | g. Rhinotracheitis (Turkey Coryza) |
| c. Aspergillosis | h. Mycoplasmosis |
| d. Newcastle disease | i. Chlamydiosis |
| e. Paramyxovirus (2,3) | j. Cryptosporidiosis |
| f. Colibacillosis | |

2. Enteric disease

- | | |
|---|--------------------------|
| a. Salmonellosis - Arizonosis | d. Hemorrhagic enteritis |
| b. Viral enteritis (Reo. Rotaviruses, Etc.) | e. Cryptosporidiosis |
| c. Coccidiosis | |

3. Skeletal problems

- | | |
|--|-------------------------|
| a. Developmental and metabolic disorders | |
| 1. Tibial dyschondroplasia | |
| 2. Rotated tibia | 4. Long bone distortion |
| 3. Rickets | 5. Shakey leg syndrome |
| b. Infectious disorders | |
| 1. Bacterial osteomyelitis and arthritis | |
| 2. Mycoplasmosis | |

4. Immune diseases

- a. Hemorrhagic enteritis

5. Mycotoxicosis

6. Miscellaneous group

- | | |
|---|--|
| a. Interaction between genetics and environment | |
| on disease resistance | |
| b. Acute hypertensive angiopathy (Sudden death) | |
| c. Roundheart | |
| e. Pectoral myopathy | |
| f. Hatchability problems (<u>M. iowae</u>) | |

7. Systemic infections

- | |
|----------------------------|
| a. Erysipelas |
| b. Transmissible neoplasms |
| c. Turkey virus hepatitis |

8. Parasitic problems - 1. External parasites, 2. Internal parasites

IMPORTANT TURKEY HEALTH PROBLEMS - 1988 - (Table 2)

PRIORITIES FOR RESEARCH

Health Problems - Market Turkeys

1. Respiratory diseases

- | | |
|------------------------------------|---------------------------|
| a. Colibacillosis | f. Newcastle disease |
| b. Pasteurellosis | g. Paramyxovirus inf. 2,3 |
| c. Avian influenza | h. Mycoplasmosis |
| d. Rhinotracheitis (Turkey Coryza) | i. Chlamydiosis |
| e. Aspergillosis | j. Cryptosporidiosis |

2. Enteric diseases

- | | |
|---|--------------------------|
| a. Viral enteritis (Reo, Rotaviruses, Etc.) | |
| b. Salmonellosis-Arizonosis | d. Hemorrhagic enteritis |
| c. Coccidiosis | e. Cryptosporidiosis |

3. Skeletal problems

- | | |
|--|-------------------------|
| a. Developmental and metabolic disorders | |
| 1. Tibial dyschondroplasia | |
| 2. Rotated tibia | 4. Long bone distortion |
| 3. Rickets | 5. Shakey leg syndrome |
| b. Infectious disorders | |
| 1. Mycoplasmosis | |
| b. Bacterial - osteomyelitis and arthritis (Staph) | |

4. Immune diseases

- a. Hemorrhagic enteritis

5. Mycotoxicosis

6. Miscellaneous

- | | |
|---|---------------------------|
| a. Acute hypertensive angiopathy (sudden death) | |
| b. Roundheart | d. Leg edema |
| c. Aneurysm | e. Drug/chemical residues |

7. Systemic infections

- | | |
|---------------------------------------|---------------------------|
| a. Erysipelas | c. Turkey virus hepatitis |
| b. Transmissible neoplasms (REV, LPD) | |

8. Parasitic problems

- | | |
|-----------------------|-----------------------|
| a. External parasites | b. Internal parasites |
|-----------------------|-----------------------|

Sheep Diseases Research Needs

American Sheep Industry (1983)

1. Bluetongue disease - diagnosis and control
2. Foot rot " "
3. Pulmonary/resp. diseases " "
4. Polyarthrititis " "
5. Maintain the IR-4 program for registering drugs for use in minor species

National Wool Growers Association, Inc. (1985)

1. Foot Rot
2. Bluetongue

National Central Advisory Committee (NCA-2) (1984)

1. Respiratory diseases
2. Internal parasites
3. Enteric diseases
4. Reproductive diseases
5. Environmental, metabolic and toxic diseases
6. Foot Rot

Goat Diseases

North Central Advisory Committee (NCA-2) (1984)

1. Reproductive diseases
2. Mastitis
3. Enteric diseases
4. Caprine arthritic encephalitis
5. Foot rot
6. Caseous lymphadenitis

Horse Diseases

North Central Advisory Committee (NCA-2) (1984)

1. Respiratory diseases
2. Musculoskeletal diseases
3. Reproductive diseases
4. Digestive diseases
5. Internal parasites

